

**AMERICAN
LOCOMOTIVE
COMPANY**
NEW YORK CITY

PAMPHLET
NO. 10044

PANAMA
PACIFIC
INTERNATIONAL
EXPOSITION

AMERICAN
LOCOMOTIVE
COMPANY
NEW YORK CITY

PATENTED
JULY 1864





PANAMA-PACIFIC INTERNATIONAL EXPOSITION

SAN FRANCISCO, CALIFORNIA, 1915

EXHIBIT OF

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET, NEW YORK CITY

BUILDERS OF OVER
55,000 LOCOMOTIVES

LOCOMOTIVE BUILDERS
SINCE 1835

THE CODE WORD FOR THIS PAMPHLET IS "CALEFIED"

AMERICAN LOCOMOTIVE COMPANY

STANDARD FOUR-WHEEL TANK LOCOMOTIVES

FOR CONTRACTORS, QUARRIES, MINES AND INDUSTRIAL PLANTS

The four-wheel connected saddle tank locomotives exhibited, which are illustrated on pages 6 and 8, represent the American Locomotive Company's new standard designs for Contractors, Quarry, Mine, Industrial and other special service. On page 10 is shown a table giving the different sizes of this type of locomotive which are kept constantly in stock at our Works.

The four-wheel type of locomotive, with all the weight on the driving wheels, gives the greatest amount of hauling power for a given weight of engine; also a short rigid wheel base adapted to curves of very short radius. For these reasons, this type of locomotive is almost universally accepted as the most satisfactory for these special classes of service, where light rails, poor roadbed, rough and uneven track and sharp curves are the conditions which prevail.

Length of service, proportion of time ready for use, and work performed determine the value of a locomotive. Delays affect the whole work. To avoid delays, locomotives must be reliable and always ready for service.

With these points in mind we have designed and built our small locomotives by a unique system of construction. They are not made as a whole, but are assembled from stock

parts made to accurate gauges. Every operation is done in a carefully prepared jig.

With this system every part must be so accurately made as to fit every other locomotive of the same size and type.

We can therefore make prompt shipment of either a complete locomotive or any part. This method avoids long delays when parts wear out and also enables a user to keep on hand parts liable to wear in service with positive assurance that each part will fit.

Spare parts are available at Chicago, San Francisco and our Works at Paterson, N. J.

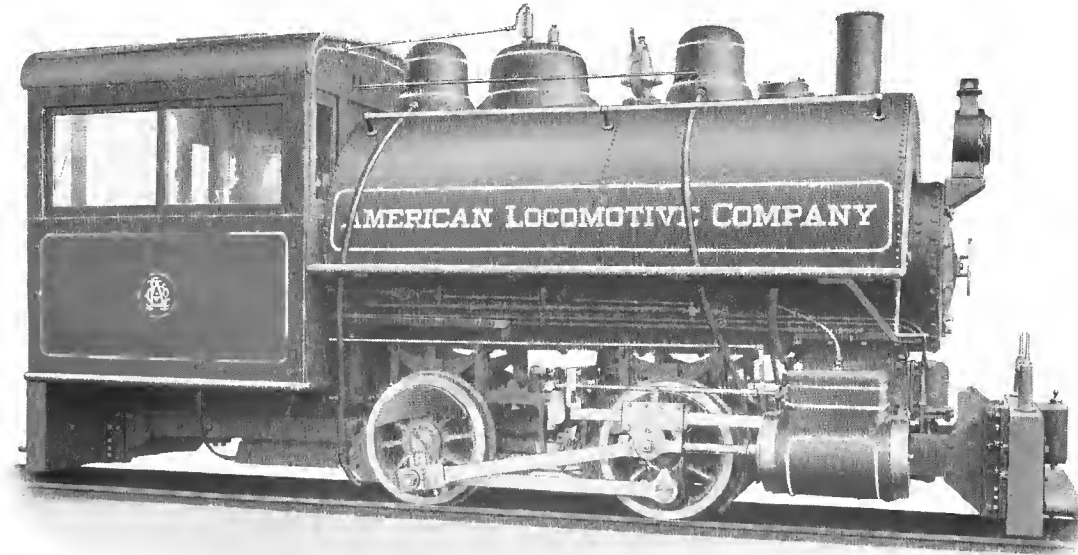
With slight changes any of these locomotives can be built suitable for oil fuel.

Every piece of material must conform to the same specifications required for 200-ton locomotives, and only the best materials are used.

Each locomotive is tested under its own steam before delivery.

Back of each design is the experience of over eighty years of continuous locomotive building and the construction of over 55,000 locomotives.

AMERICAN LOCOMOTIVE COMPANY



STANDARD FOUR-WHEEL TANK LOCOMOTIVE

CYLINDERS, 10 x 16 INCHES

FOR CONTRACTORS', QUARRY, MINE AND INDUSTRIAL SERVICE

Locomotives of this design for 36-inch and standard gauge of track are kept in stock. Early deliveries of designs for meter and other gauges can be made.

AMERICAN LOCOMOTIVE COMPANY

STANDARD FOUR-WHEEL TANK LOCOMOTIVE

CYLINDERS 10 x 16 INCHES

Gauge of track	36 inches	BOILER—Continued	
LOADED WEIGHTS		Outside diameter at front end	36 $\frac{3}{8}$ inches
On driving wheels	37,000 pounds	Length of firebox, inside	40 $\frac{3}{4}$ inches
Total engine	37,000 pounds	Width of firebox, inside	33 inches
WHEEL BASE		Number of tubes	85
Driving	4 feet 9 inches	Diameter of tubes	2 inches
Total of engine	4 feet 9 inches	Length of tubes	8 feet 3 $\frac{1}{4}$ inches
CYLINDERS		Heating surface, tubes	367 square feet
Diameter	10 inches	Heating surface, firebox	41 square feet
Stroke of piston	16 inches	Heating surface, total	408 square feet
Valves, type	Slide	Grate area	9.3 square feet
WHEELS		TANK CAPACITY	
Diameter of driving wheels, outside	30 inches	Water	700 gallons
JOURNALS—DIAMETER AND LENGTH		Fuel	Bit. coal, 600 pounds
Driving	5 x 6 inches	CLEARANCE LIMITATIONS	
BOILER		Height, extreme	9 feet 8 $\frac{3}{4}$ inches
Type	Straight Top	Width, extreme	6 feet 10 $\frac{3}{4}$ inches
Working pressure per square inch	165 pounds	Length over all	20 feet 7 $\frac{3}{4}$ inches
		MAXIMUM TRACTIVE POWER, 7,480 POUNDS	

AMERICAN LOCOMOTIVE COMPANY



STANDARD FOUR-WHEEL TANK LOCOMOTIVE

CYLINDERS, 16 x 24 INCHES

FOR CONTRACTORS', QUARRY, MINE AND INDUSTRIAL SERVICE

Locomotives of this design for standard gauge of track are kept in stock. Early deliveries of designs for gauges other than standard can be made.

AMERICAN LOCOMOTIVE COMPANY

STANDARD FOUR-WHEEL TANK LOCOMOTIVE

CYLINDERS, 16 x 24 INCHES

Gauge of track	4 feet 8½ inches	BOILER	
LOADED WEIGHTS		Type	Straight Top
		Working pressure per square inch	165 pounds
		Outside diameter at front end	48 7⁄8 inches
On driving wheels	89,000 pounds	Length of firebox, inside	52 3⁄16 inches
Total engine	89,000 pounds	Width of firebox, inside	55 ¼ inches
WHEEL BASE		Number of tubes	143
		Diameter of tubes	2 inches
		Length of tubes	11 feet 8 inches
Driving	7 feet 0 inches	Heating surface, tubes	867 square feet
Total of engine	7 feet 0 inches	Heating surface, firebox	66 square feet
CYLINDERS		Heating surface, total	933 square feet
		Grate area	20.3 square feet
		TANK CAPACITY	
Diameter	16 inches	Water	1300 gallons
Stroke of piston	24 inches	Fuel	Bit. coal, 2500 pounds
Valves, type	Slide	CLEARANCE LIMITATIONS	
WHEELS		Height, extreme	12 feet 6 ¾ inches
		Width, extreme	9 feet 4 ¾ inches
		Length over all	29 feet 11 ½ inches
JOURNALS, DIAMETER AND LENGTH		MAXIMUM TRACTIVE POWER, 18,710 POUNDS	
Driving	8 ½ x 9 inches		

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STANDARD FOUR-WHEEL TANK LOCOMOTIVES

O-4-O-T-TYPE

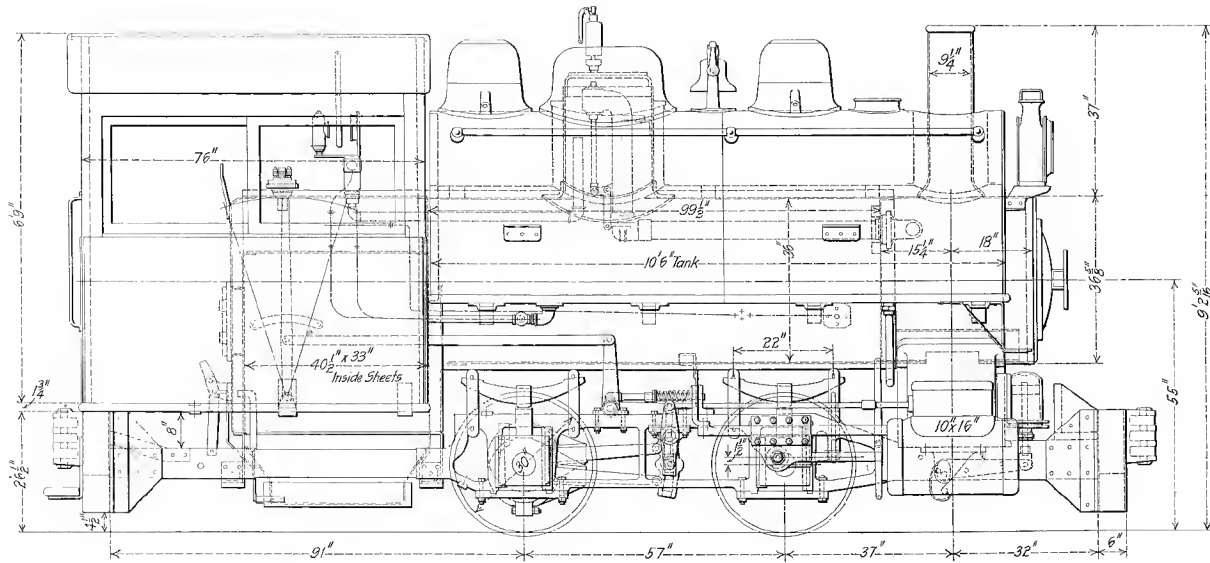
CODE WORD	Gauge of Track	Diam. and Stroke of Cylinder	Diam. of Driving Wheels	Wheel Base	Capacity of Water Tank	Weight in Working Order	Boiler Pressure	Tractive Power	Weight of Lightest Rail Advised	Radius of Sharpest Curve Advised	Hauling Capacity in Tons of 2000 Pounds (Exclusive of Locomotive)						
	Feet and Inches	Inches	Inches	Feet and Inches	Gallons	Pounds	Pounds	Pounds	Per Yard	Feet	On Level	On Grades of					
												1½%	1%	1½%	2%	2½%	3%
AMARENA . . .	3-0	9x14	30 ½	4-6	425	27,000	165	5,210	30	35	787	300	182	128	97	78	65
AMBICARPO . .	4-8 ½	9x14	30 ½	4-6	425	28,000	165	5,210	30	35	787	300	182	128	97	78	65
AMBAUVAS . .	3-0	10x16	30 ½	4-9	700	37,000	165	7,350	40	40	1,111	426	258	182	139	110	90
AMBIVERIS . .	4-8 ½	10x16	30 ½	4-9	700	38,000	165	7,350	40	40	1,111	426	258	182	139	110	90
AMAREND0 . .	3-0	11x16	33 ½	4-9	750	40,000	165	8,100	40	40	1,225	470	285	200	153	121	100
ANNUTATIVO . .	4-8 ½	11x16	33 ½	4-9	750	41,000	165	8,100	40	40	1,225	470	285	200	153	121	100
ANAEMIC . . .	3-0	12x18	34 ½	5-3	900	50,000	165	10,500	45	45	1,590	611	371	262	200	160	133
ANOHINABA . .	4-8 ½	12x18	34 ½	5-3	900	51,000	165	10,500	45	45	1,590	611	371	262	200	160	133
ANTOLITA . . .	4-8 ½	13x18	34 ½	6-3	1,300	58,000	165	12,370	50	50	1,875	720	440	310	240	190	160
ANTOLISSA . .	4-8 ½	14x22	40	7-0	1,700	76,000	180	16,500	65	55	2,500	960	580	410	315	250	210
AMPSANCTUS .	4-8 ½	16x24	46	7-0	1,300	89,000	165	18,710	80	55	2,835	1,085	660	465	355	285	235

The above gauges represent locomotives in stock. Any practicable gauge can be furnished.

Modifications in the wheel arrangement will be quickly and efficiently made. Prices upon request.

Figures for Hauling Capacity are based on a frictional resistance of 6 ¼ pounds per ton of 2,000 pounds. Where track and cars are in poor condition, the resistance will be greatly increased. In such cases, therefore, allowance should be made for actual Hauling Capacities considerably less than those given in the table.

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SIDE ELEVATION OF STANDARD FOUR-WHEEL TANK LOCOMOTIVE

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MIKADO TYPE LOCOMOTIVES

FOR LOGGING SERVICE

Because of the character of the country in which logging operations are carried on and the comparatively temporary nature of the work, making the construction of a permanent road-bed uneconomical, the selection of the most suitable class of motive power for such operations is a difficult problem. Severe grades, sharp curves, light rails and poor road-bed with a resultant uneven track, are some of the ordinary conditions which prevail in this kind of service.

Some of the features of the Mikado type which recommend it as a particularly suitable engine for all around service on logging operations may be briefly noted as follows:

Severe grades require a large hauling capacity. Four pairs of driving wheels allow large cylinders and the necessary

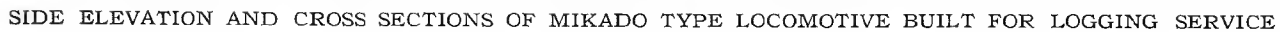
boiler capacity and adhesion with a comparatively light weight per wheel. This light weight per wheel becomes necessary because of light rails and poor road-bed.

Plain tires on the main and intermediate drivers allow this seemingly long wheel base to operate on sharp curves.

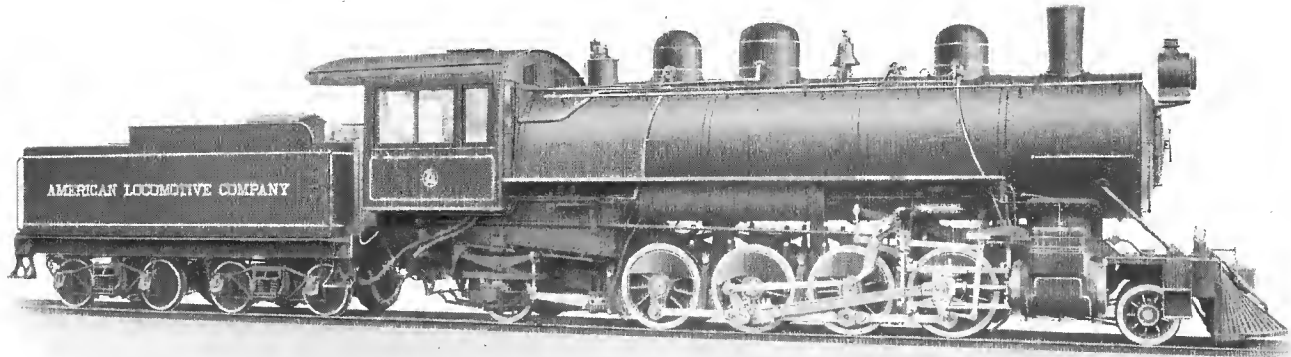
Front and rear trucks provide good guiding qualities and make a steady, easy riding engine, which can be operated in either direction at comparatively high speeds on a poor road-bed.

The large boiler has ample capacity to supply steam to the cylinders when working at their maximum power, thus insuring a free steaming engine.

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MIKADO TYPE LOCOMOTIVE BUILT FOR LOGGING SERVICE

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MIKADO TYPE LOCOMOTIVE

BUILT FOR LOGGING SERVICE

Gauge of track 4 feet 8 ½ inches

LOADED WEIGHTS

On driving wheels 144,500 pounds
On leading wheels 16,500 pounds
On trailing wheels 29,000 pounds
Total engine 190,000 pounds
Tender 100,300 pounds

WHEEL BASE

Driving 13 feet 6 inches
Total of engine 29 feet 6 inches
Total of engine and tender 56 feet 3 ¾ inches

CYLINDERS

Diameter 20 inches
Stroke of piston 28 inches
Valves, type Slide

WHEELS

Diameter of driving wheels, outside 48 inches
Diameter of engine truck wheels 30 inches
Diameter of trailing truck wheels 33 inches
Diameter of tender wheels 33 inches

JOURNALS—DIAMETER AND LENGTH

Driving 8 ½ x 10 inches
Engine truck 5 x 9 inches

JOURNALS—DIAMETER AND LENGTH—Continued

Trailing 6 x 12 inches
Tender 5 x 9 inches

BOILER

Type Straight Top
Working pressure per square inch 180 pounds
Outside diameter at front end 74 ½ inches
Length of firebox, inside 96 ¾ inches
Width of firebox, inside 75 ¾ inches
Number of tubes 331
Diameter of tubes 2 inches
Length of tubes 17 feet 0 inches
Heating surface, tubes 2922 square feet
Heating surface, firebox 170 square feet
Heating surface, total 3092 square feet
Grate area 50.2 square feet

TENDER CAPACITY

Water 5,000 gallons
Fuel Bit. Coal—9 tons

CLEARANCE LIMITATIONS

Height, extreme 14 feet 5 ¾ inches
Width, extreme 10 feet 2 inches
Length over all 66 feet 2 ½ inches

MAXIMUM TRACTIVE POWER, 35,700 POUNDS

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MIKADO TYPE LOCOMOTIVES

FOR FREIGHT SERVICE

For hauling heavy trains at high rates of speed, large cylinders, large drivers, and heavy tractive weights are required. Large cylinders and large drivers demand great steam making capacity; therefore large heating surface and large grate areas must be provided. The trailing truck of the Mikado locomotive renders it possible to arrange designs which are very satisfactory in all these respects.

With freight trains outgrowing the boiler capacity of the Consolidation type, the Mikado type becomes its logical successor, and for service which lies within the starting capacity of eight coupled wheels, the Mikado locomotive is fast becoming the more popular type.

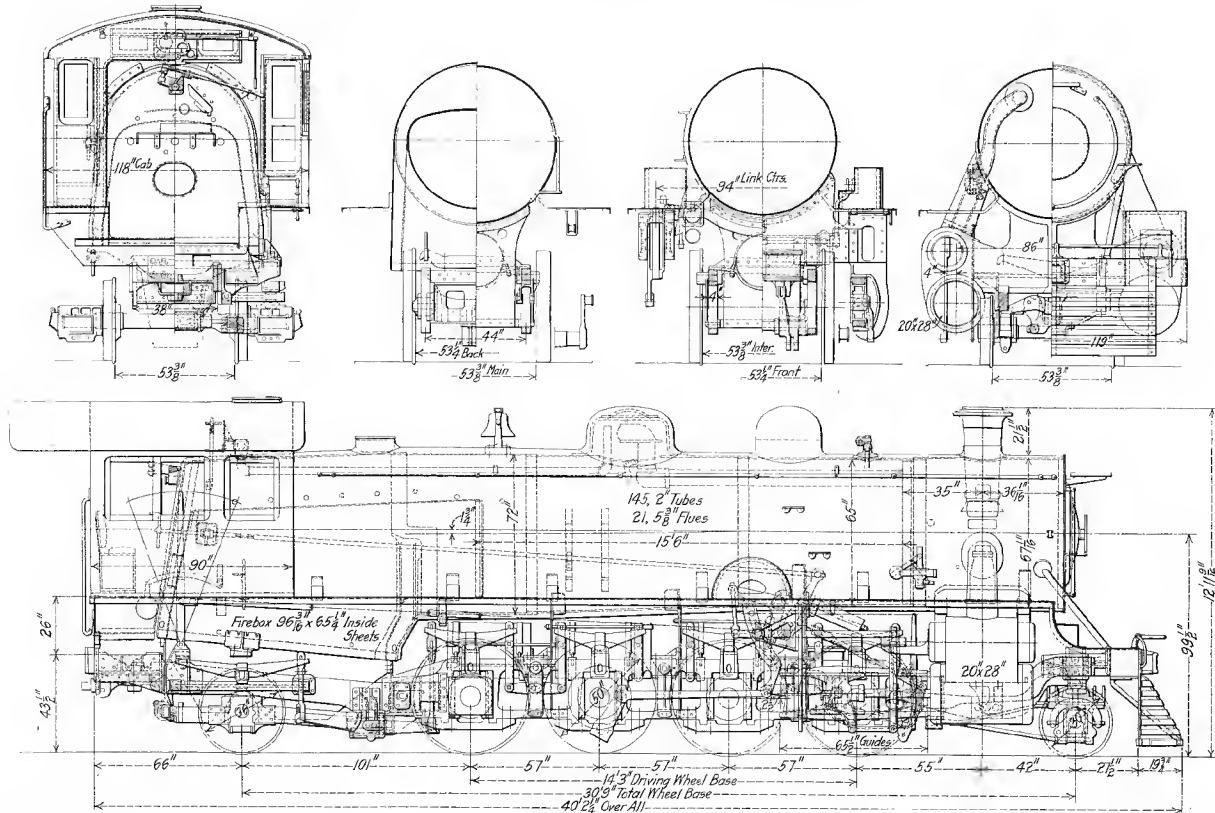
It may be regarded as a Consolidation locomotive with a trailing truck. Originally designed to give a deep firebox and later to allow the use of the wide firebox on passenger engines, the trailing truck has demonstrated good running qualities in service. It is not only of great assistance in steadying the engine on curves, but it allows the use of a long boiler without

increasing the length of rigid wheel base. The advantage gained by the use of trailing wheels in the opportunity for ample depth at the front of the firebox, or throat, thereby rendering possible a very satisfactory arrangement of the firebrick arch, is also an important one.

This boiler of large capacity, coupled with a high temperature superheater and firebrick arch, secures a maximum amount of power per unit of fuel consumed. With this boiler combine larger drivers and an increased cylinder diameter, and we have a locomotive which, when compared with the Consolidation, gives an increase in power at high rates of speed far greater in proportion than the increase in weight.

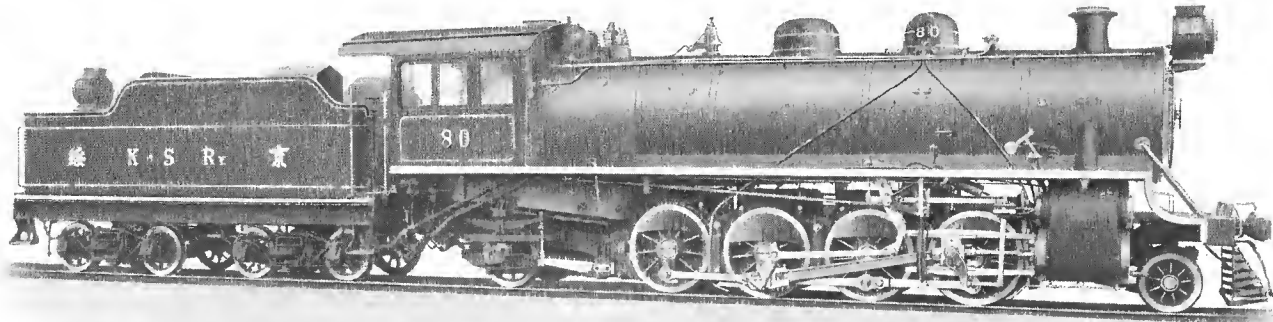
It is most admirably suited to haul slow maximum tonnage freight trains one day and fast freight trains the next, a condition frequently met in railroad operation. In heavy road service over moderate grades where high tractive power and large steam capacity are required, the Mikado locomotive has made some remarkable records.

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SIDE ELEVATION AND CROSS SECTIONS OF MIKADO TYPE LOCOMOTIVE BUILT FOR PEKIN-KALGAN RAILWAY

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MIKADO TYPE LOCOMOTIVE BUILT FOR PEKIN-KALGAN RAILWAY

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MIKADO TYPE LOCOMOTIVE BUILT FOR PEKIN-KALGAN RAILWAY

Gauge of track	4 feet 8 $\frac{1}{2}$ inches	BOILER	
LOADED WEIGHTS		Type	Straight Top
On driving wheels	138,500 pounds	Working pressure per square inch	180 pounds
On leading wheels	17,500 pounds	Outside diameter at front end	66 inches
On trailing wheels	30,000 pounds	Length of firebox, inside	96 $\frac{3}{16}$ inches
Total engine	186,000 pounds	Width of firebox, inside	65 $\frac{1}{4}$ inches
Tender	110,400 pounds	Number and diameter of tubes	145—2 inches
WHEEL BASE		Number and diameter of flues	21—5 $\frac{3}{8}$ inches
Driving	14 feet 3 inches	Length of tubes and flues	15 feet 6 inches
Total of engine	30 feet 9 inches	Heating surface, tubes and flues	1625.0 square feet
Total of engine and tender	57 feet 11 $\frac{3}{4}$ inches	Heating surface, firebox	192.0 square feet
CYLINDERS		Heating surface, arch tubes	17.5 square feet
Diameter	20 inches	Heating surface, total	1834.5 square feet
Stroke of piston	28 inches	Superheating surface	368.0 square feet
Valves, type	Piston	Grate area	43.6 square feet
WHEELS		Combustion chamber, length	36 inches
Diameter of driving wheels, outside	50 inches	TENDER CAPACITY	
Diameter of engine truck wheels	30 inches	Water	5,000 gallons
Diameter of trailing truck wheels	36 inches	Fuel	Bit. Coal 18,000 pounds
Diameter of tender wheels	33 inches	CLEARANCE LIMITATIONS	
JOURNALS, DIAMETER AND LENGTH		Height, extreme	13 feet 2 $\frac{3}{4}$ inches
Driving	9 x 11 inches	Width, extreme	9 feet 11 inches
Engine truck	5 $\frac{1}{2}$ x 10 inches	Length over all	65 feet 9 inches
Trailing	6 x 14 inches	MAXIMUM TRACTIVE POWER, 34,300 POUNDS	
Tender	5 x 9 inches		

AMERICAN LOCOMOTIVE COMPANY

CONDITIONS AND REQUIREMENTS OF SERVICE

REQUESTS FOR PROPOSITIONS SHOULD GIVE AS MUCH OF THE FOLLOWING INFORMATION AS POSSIBLE

Gauge of track	Radius of sharpest curve on this grade and length of curve
Fuel	on grade
Weight of rail per yard	Radius of sharpest curve (on grade or level?), length of
Number of ties per mile, or spacing of ties center to	sharpest curve
center	Load to be started on level or grade; if on grade, give
Class of service	description of it
Number of loaded cars to be hauled each trip and weight	Total length of run
of load for one car	Distance between water stations
Number of empty cars to be hauled on return trip and	Limitations: height, width, length, total wheel base
weight of empty car	Preferred design, if any
Steepest grade for loaded cars and length of grade	Kind of coupling and height from rail

If grades are numerous, a brief description of them should be given.

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METRIC CONVERSION TABLE

ARRANGED BY MR. C. W. HUNT, NEW YORK

Millimetres $\times .03937$ = inches.
 Millimetres $\div 25.4$ = inches.
 Centimetres $\times .3937$ = inches.
 Centimetres $\div 2.54$ = inches.
 Metres $\times 39.37$ = inches (Act of Congress).

Metres $\times 3.281$ = feet.
 Metres $\times 1.094$ = yards.
 Kilometres $\times .621$ = miles.
 Kilometres $\div 1.6093$ = miles.
 Kilometres $\times 3280.7$ = feet.

Square millimetres $\times .00155$ = sq. inches.
 Square millimetres $\div 645.1$ = sq. inches.
 Square centimetres $\times .155$ = sq. inches.
 Square centimetres $\div 6.451$ = sq. inches.
 Square metres $\times 10.764$ = sq. feet.

Cubic centimetres $\div 16.383$ = cubic inches.
 Cubic metres $\times 35.315$ = cubic feet.

Cubic metres $\times 1.308$ = cubic yards.
 Cubic metres $\times 264.2$ = gallons (231 cubic inches.)
 Litres $\times 61.022$ = cubic inches (Act of Congress).
 Litres $\times .2642$ = gallons (231 cubic inches).
 Litres $\div 3.78$ = gallons (231 cubic inches).

Litres $\div 28.316$ = cubic feet.
 Hectolitres $\times 3.531$ = cubic feet.
 Hectolitres $\times .131$ = cubic yards.
 Hectolitres $\div 26.42$ = gallons (231 cubic inches).

Grammes $\div 28.35$ = ounces avoirdupois.
 Grammes per cubic centimetre $\div 27.7$ = lb. per cubic in.

Kilogrammes $\times 2.2046$ = pounds.
 Kilogrammes $\times 35.3$ = ounces avoirdupois.
 Kilogrammes $\div 1102.3$ = tons (2,000 lbs.).
 Kilogrammes per square centimetre $\times 14.223$ = lb. per sq. in.

Cheval vapeur $\div .9863$ = horse-power.
 (Centigrade $\times 1.8$) $+ 32$ = degree Fahrenheit.

AMERICAN LOCOMOTIVE COMPANY

GENERAL OFFICE

NEW YORK, N. Y. 30 CHURCH STREET
CABLE ADDRESS, "LOCOMOTIVE NEW YORK"

BRANCH OFFICES

CHICAGO, ILL.	McCORMICK BUILDING
MONTREAL, CANADA	DOMINION EXPRESS BUILDING
ST. PAUL, MINN.	PIONEER BUILDING
SAN FRANCISCO, CAL.	N. B. LIVERMORE & CO., MERCHANTS' NATIONAL BANK BUILDING
LOS ANGELES, CAL.	N. B. LIVERMORE & CO., HIBERNIAN BANK BUILDING
SEATTLE, WASH.	NORTHWESTERN EQUIPMENT CO., ALASKA BUILDING
PORTLAND, ORE.	NORTHWESTERN EQUIPMENT CO., RAILWAY EXCHANGE
LONDON, ENGLAND	DAVIS & LLOYD, 26 VICTORIA ST., WESTMINSTER, S.W.
JAPAN, CHINA AND KOREA	MITSUI BUSSAN KAISHA, TOKIO, JAPAN
CUBA	KRAJEWSKI-PESANT CORP., CALLE CUBA 51, HAVANA, CUBA
ECUADOR, PERU AND BOLIVIA	W. R. GRACE & CO., GUAYAQUIL, LIMA AND LA PAZ
BRAZIL	H. M. SLOAT, RIO DE JANEIRO, BRAZIL
CHILE	C. S. WAGNER, SANTIAGO, CHILE
ARGENTINE AND URUGUAY	A. H. DICK, BUENOS AIRES, ARGENTINE





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